FIG. 1

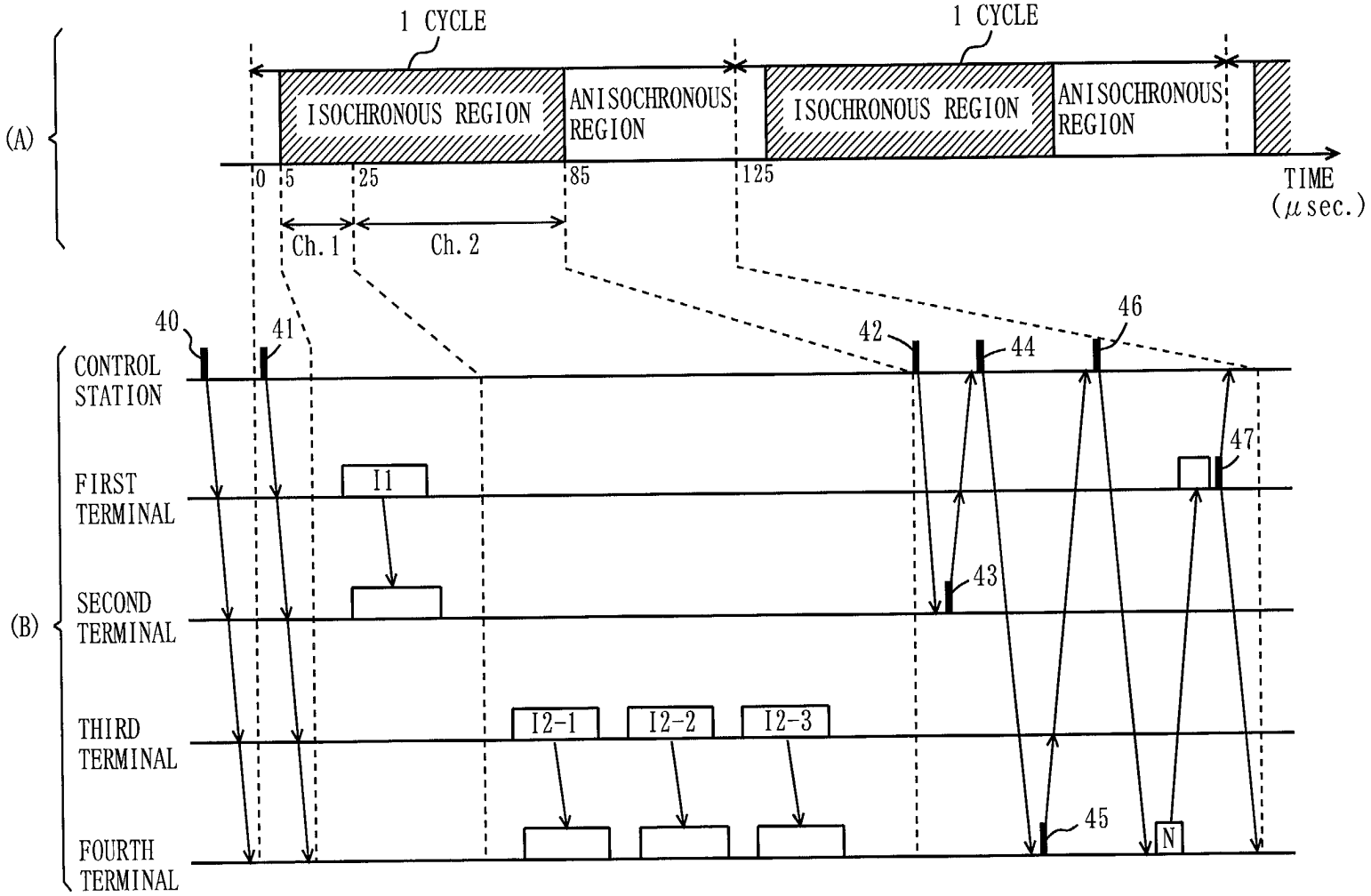
1 CYCLE
1 CYCLE
(A)
ISOCHRONOUS REGION
ANISOCHRONOUS REGION
ISOCHRONOUS REGION
ANISOCHRONOUS REGION
0
5
25
85
125
TIME
(μsec.)
Ch. 1
Ch. 2
40
41
42
44
46
47
43
45
N
CONTROL STATION
FIRST TERMINAL
SECOND TERMINAL
THIRD TERMINAL
FOURTH TERMINAL
(B)
I1
I2-1
I2-2
I2-3

FIG. 2

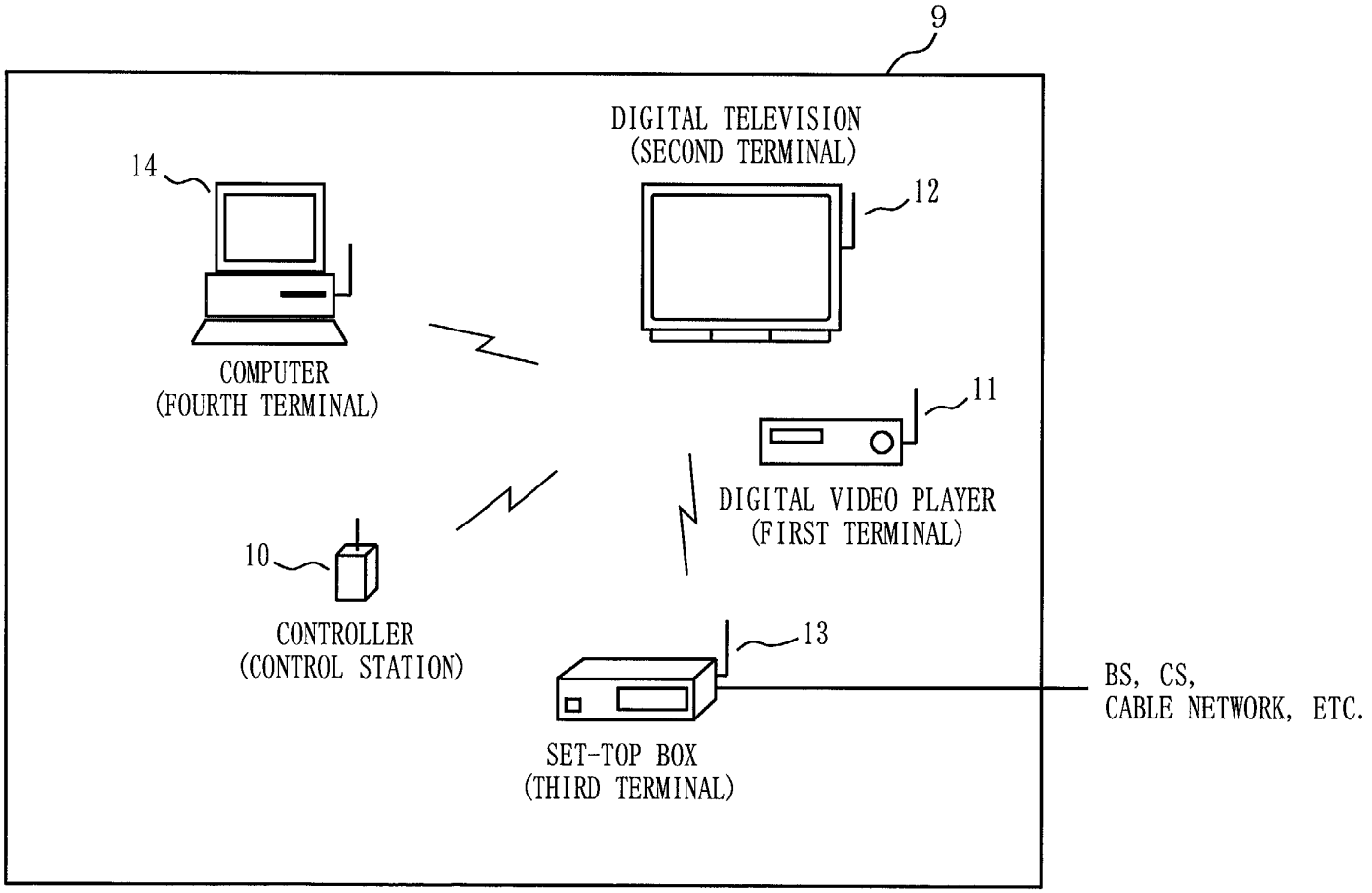
9
DIGITAL TELEVISION
(SECOND TERMINAL)
12
14
COMPUTER
(FOURTH TERMINAL)
11
DIGITAL VIDEO PLAYER
(FIRST TERMINAL)
10
CONTROLLER
(CONTROL STATION)
13
SET-TOP BOX
(THIRD TERMINAL)
BS, CS,
CABLE NETWORK, ETC.

FIG. 3

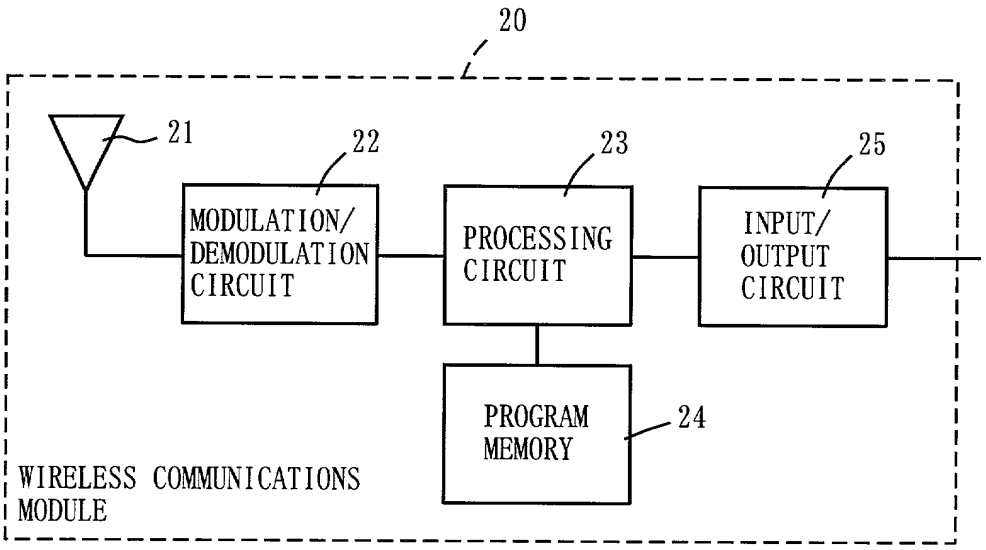
20
21
22
23
25
MODULATION/
DEMODULATION
CIRCUIT
PROCESSING
CIRCUIT
INPUT/
OUTPUT
CIRCUIT
PROGRAM
MEMORY
24
WIRELESS COMMUNICATIONS
MODULE

FIG. 4

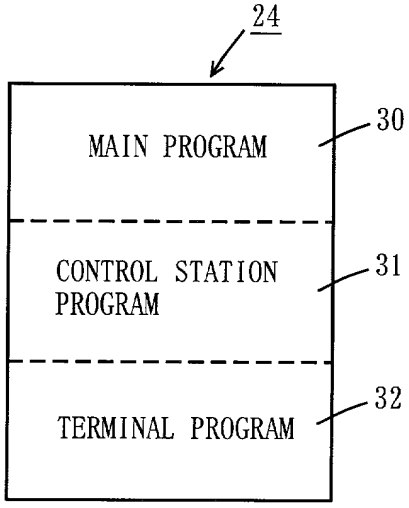
24
MAIN PROGRAM
30
CONTROL STATION
PROGRAM
31
TERMINAL PROGRAM
32

FIG. 5

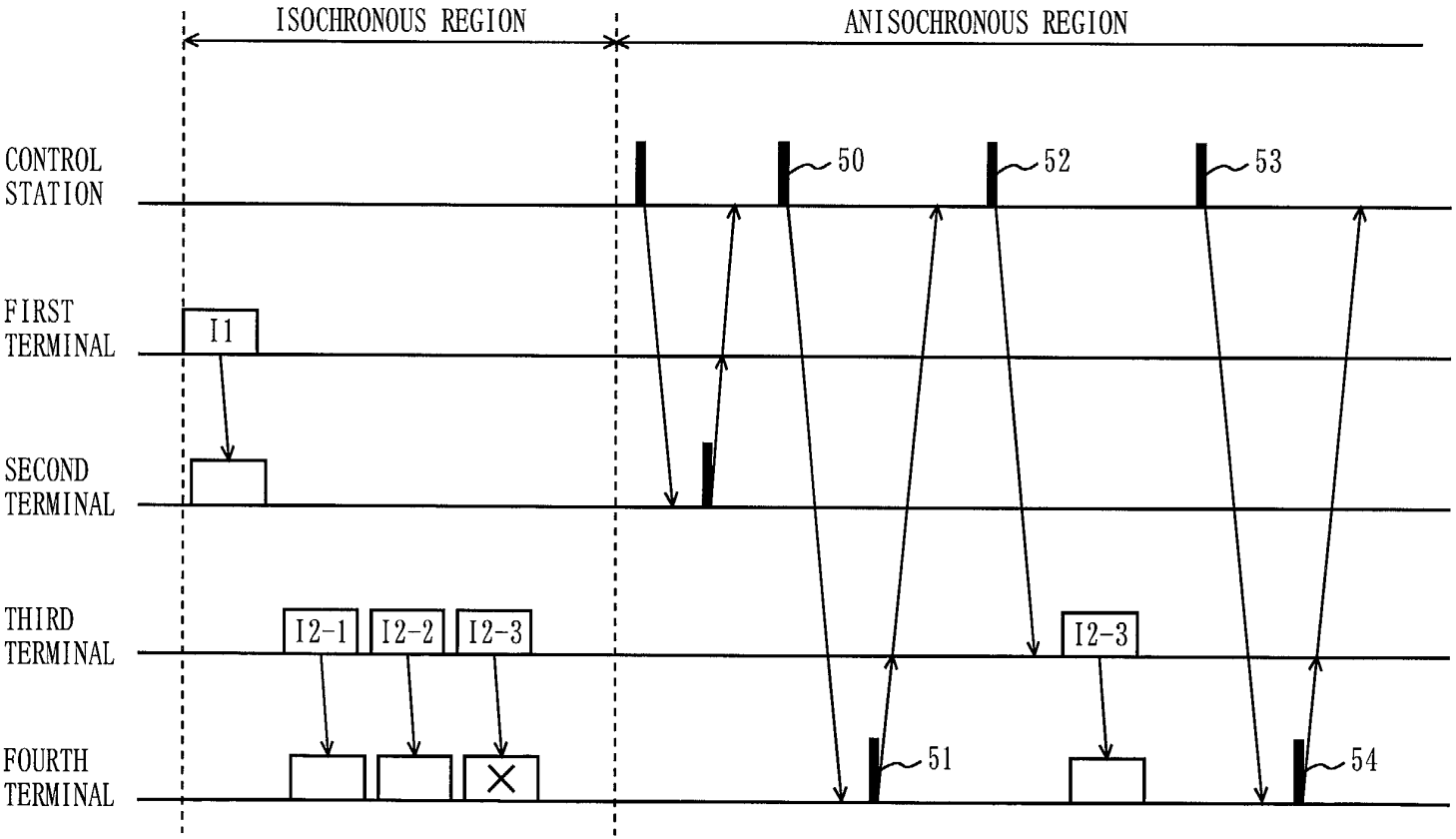
ISOCHRONOUS REGION
ANISOCHRONOUS REGION
CONTROL STATION
FIRST TERMINAL
SECOND TERMINAL
THIRD TERMINAL
FOURTH TERMINAL
I1
I2-1
I2-2
I2-3
I2-3
50
51
52
53
54

FIG. 6

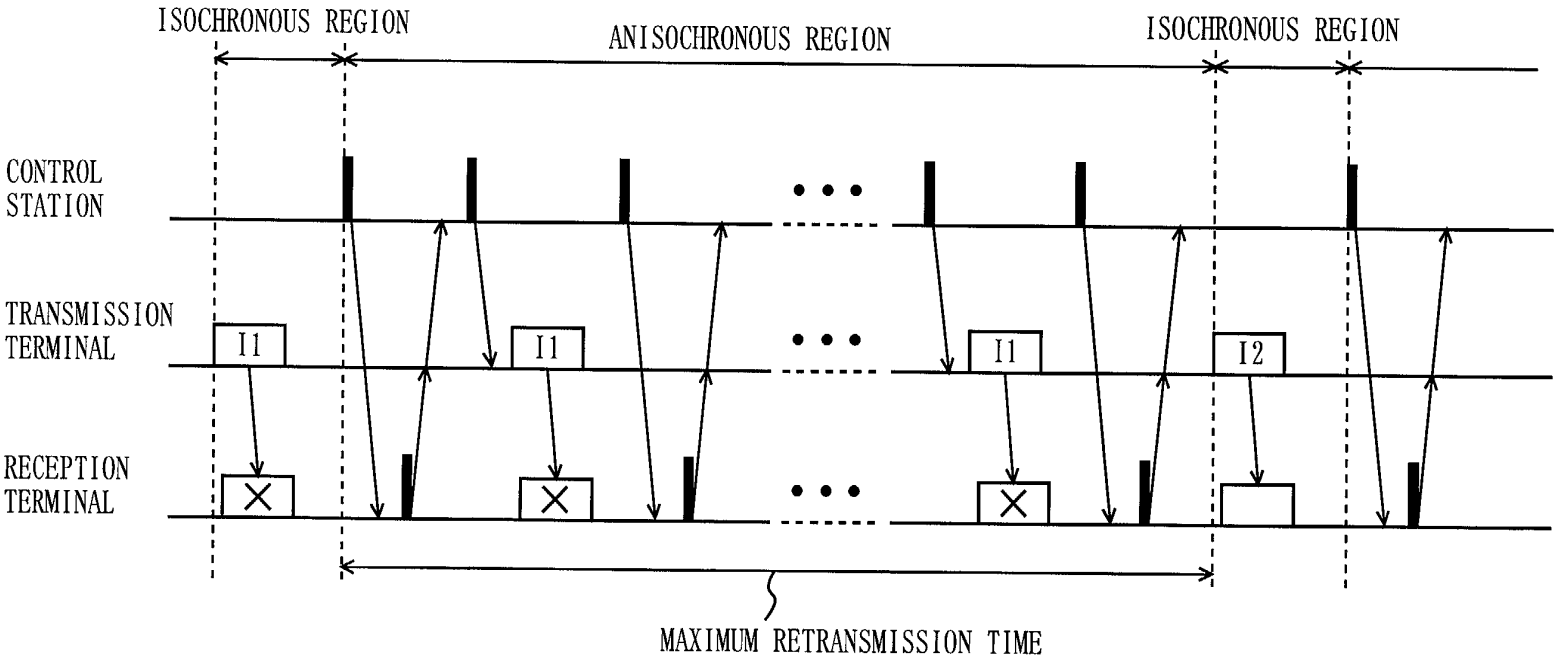
ISOCHRONOUS REGION
ANISOCHRONOUS REGION
ISOCHRONOUS REGION
CONTROL STATION
TRANSMISSION TERMINAL
RECEPTION TERMINAL
I1
I1
I1
I2
MAXIMUM RETRANSMISSION TIME

FIG. 7

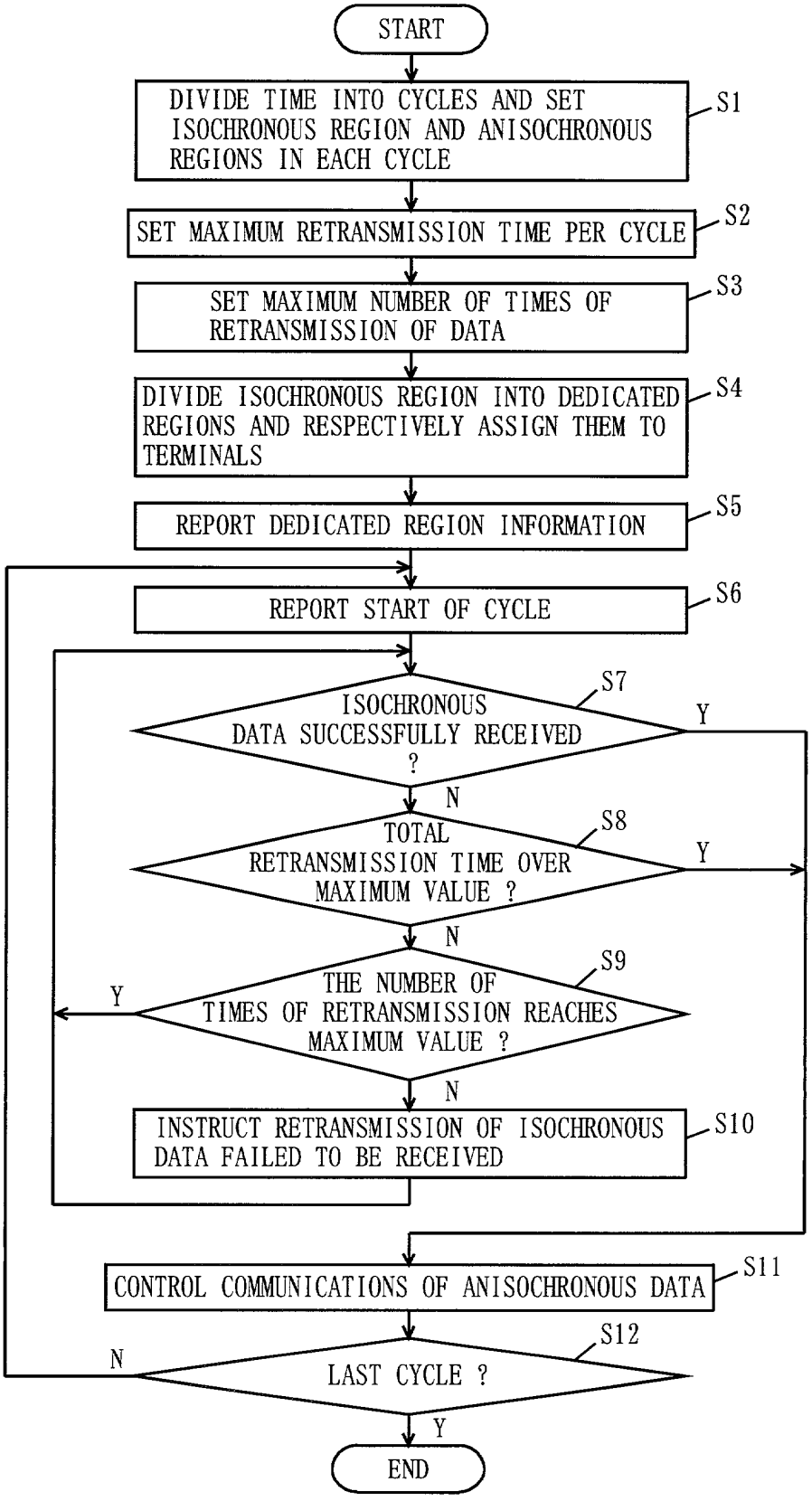
START
DIVIDE TIME INTO CYCLES AND SET ISOCHRONOUS REGION AND ANISOCHRONOUS REGIONS IN EACH CYCLE
S1
SET MAXIMUM RETRANSMISSION TIME PER CYCLE
S2
SET MAXIMUM NUMBER OF TIMES OF RETRANSMISSION OF DATA
S3
DIVIDE ISOCHRONOUS REGION INTO DEDICATED REGIONS AND RESPECTIVELY ASSIGN THEM TO TERMINALS
S4
REPORT DEDICATED REGION INFORMATION
S5
REPORT START OF CYCLE
S6
ISOCHRONOUS DATA SUCCESSFULLY RECEIVED ?
S7
Y
N
TOTAL RETRANSMISSION TIME OVER MAXIMUM VALUE ?
S8
Y
N
THE NUMBER OF TIMES OF RETRANSMISSION REACHES MAXIMUM VALUE ?
S9
Y
N
INSTRUCT RETRANSMISSION OF ISOCHRONOUS DATA FAILED TO BE RECEIVED
S10
CONTROL COMMUNICATIONS OF ANISOCHRONOUS DATA
S11
LAST CYCLE ?
S12
N
Y
END

FIG. 8

DEDICATED REGION INFORMATION PACKET HEADER		
ISOCHRONOUS DATA NUMBER 1		
DATA LENGTH	NUMBER OF BLOCKS	ACK TRANSMISSION TIME
SEQUENCE NUMBER 1	BLOCK LENGTH 1	DATA TRANSMISSION TIME 1
SEQUENCE NUMBER 2	BLOCK LENGTH 2	DATA TRANSMISSION TIME 2
SEQUENCE NUMBER 3	BLOCK LENGTH 3	DATA TRANSMISSION TIME 3
SEQUENCE NUMBER 4	BLOCK LENGTH 4	DATA TRANSMISSION TIME 4
ISOCHRONOUS DATA NUMBER 2		
DATA LENGTH	NUMBER OF BLOCKS	ACK TRANSMISSION TIME
SEQUENCE NUMBER 1	BLOCK LENGTH 1	DATA TRANSMISSION TIME 1
SEQUENCE NUMBER 2	BLOCK LENGTH 2	DATA TRANSMISSION TIME 2
ISOCHRONOUS DATA NUMBER 3		
DATA LENGTH	NUMBER OF BLOCKS	ACK TRANSMISSION TIME
SEQUENCE NUMBER 1	BLOCK LENGTH 1	DATA TRANSMISSION TIME 1
ISOCHRONOUS DATA NUMBER 4		
DATA LENGTH	NUMBER OF BLOCKS	ACK TRANSMISSION TIME
SEQUENCE NUMBER 1	BLOCK LENGTH 1	DATA TRANSMISSION TIME 1
CRC		

FIG. 9

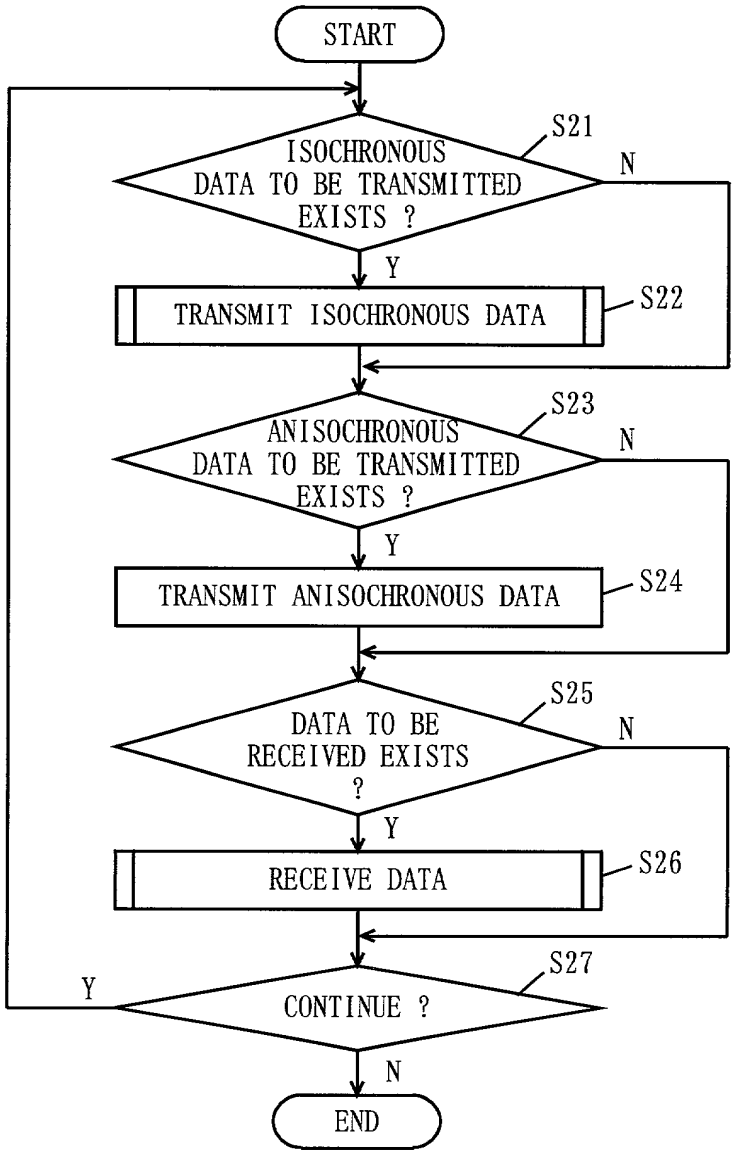
START
S21
ISOCHRONOUS DATA TO BE TRANSMITTED EXISTS ?
N
Y
TRANSMIT ISOCHRONOUS DATA
S22
S23
ANISOCHRONOUS DATA TO BE TRANSMITTED EXISTS ?
N
Y
TRANSMIT ANISOCHRONOUS DATA
S24
S25
DATA TO BE RECEIVED EXISTS ?
N
Y
RECEIVE DATA
S26
S27
Y
CONTINUE ?
N
END

FIG. 10

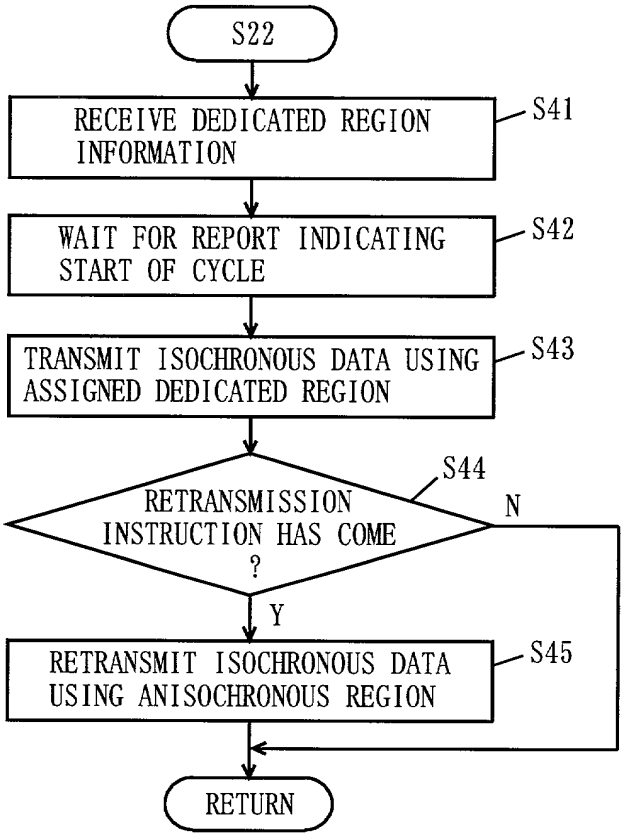
S22
RECEIVE DEDICATED REGION INFORMATION
S41
WAIT FOR REPORT INDICATING START OF CYCLE
S42
TRANSMIT ISOCHRONOUS DATA USING ASSIGNED DEDICATED REGION
S43
RETRANSMISSION INSTRUCTION HAS COME ?
S44
N
Y
RETRANSMIT ISOCHRONOUS DATA USING ANISOCHRONOUS REGION
S45
RETURN

FIG. 11

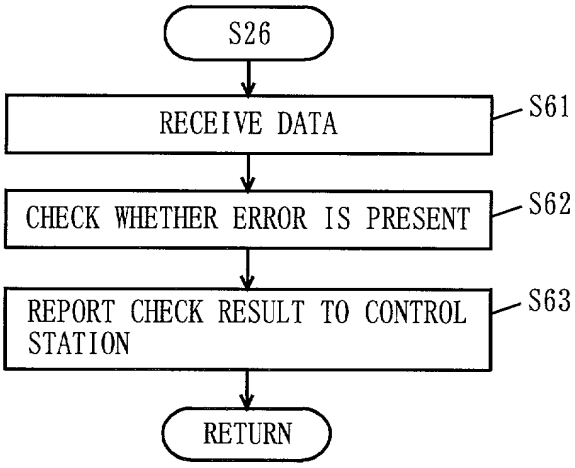
S26
RECEIVE DATA
S61
CHECK WHETHER ERROR IS PRESENT
S62
REPORT CHECK RESULT TO CONTROL STATION
S63
RETURN

FIG. 12

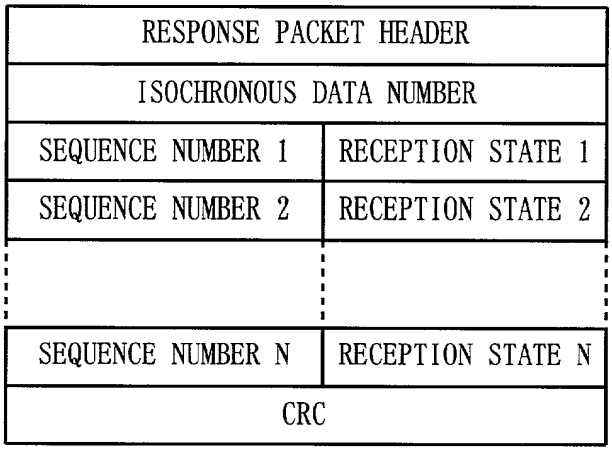
RESPONSE PACKET HEADER
ISOCHRONOUS DATA NUMBER
SEQUENCE NUMBER 1
RECEPTION STATE 1
SEQUENCE NUMBER 2
RECEPTION STATE 2
SEQUENCE NUMBER N
RECEPTION STATE N
CRC

FIG. 13

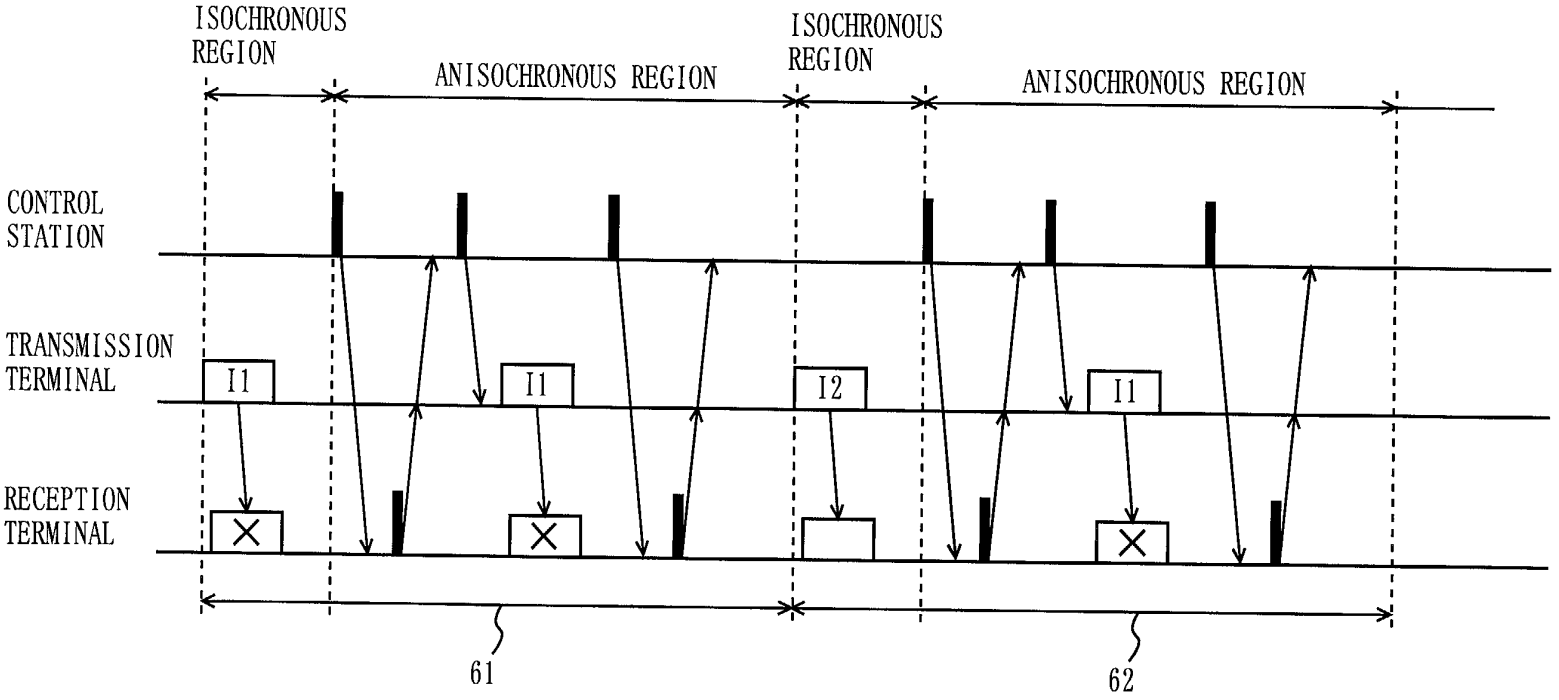
ISOCHRONOUS REGION
ANISOCHRONOUS REGION
ISOCHRONOUS REGION
ANISOCHRONOUS REGION
CONTROL STATION
TRANSMISSION TERMINAL
RECEPTION TERMINAL
I1
I1
I2
I1
61
62

FIG. 14

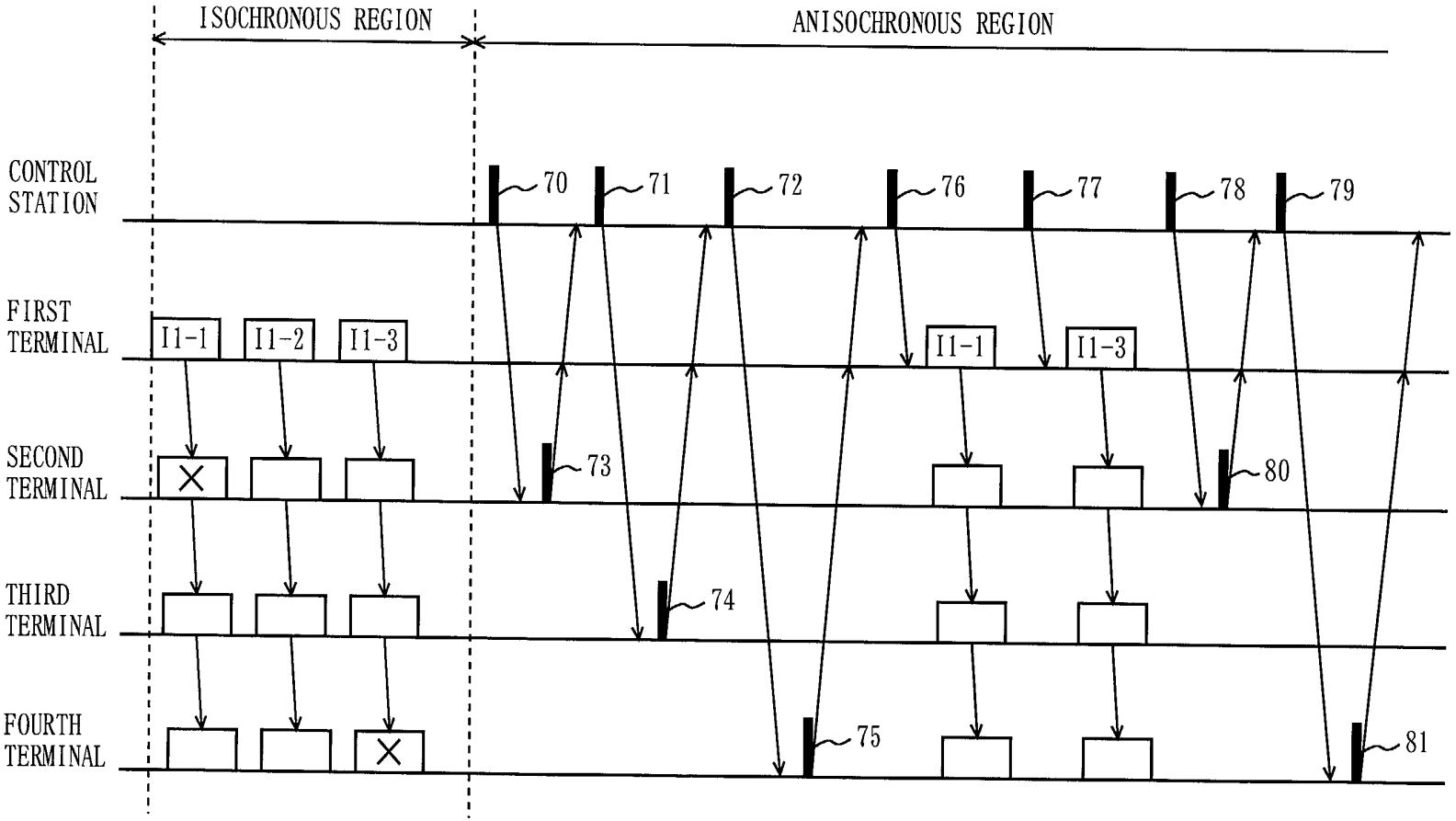
ISOCHRONOUS REGION
ANISOCHRONOUS REGION
CONTROL STATION
FIRST TERMINAL
SECOND TERMINAL
THIRD TERMINAL
FOURTH TERMINAL
I1-1
I1-2
I1-3
I1-1
I1-3
70
71
72
76
77
78
79
73
74
75
80
81

FIG. 15

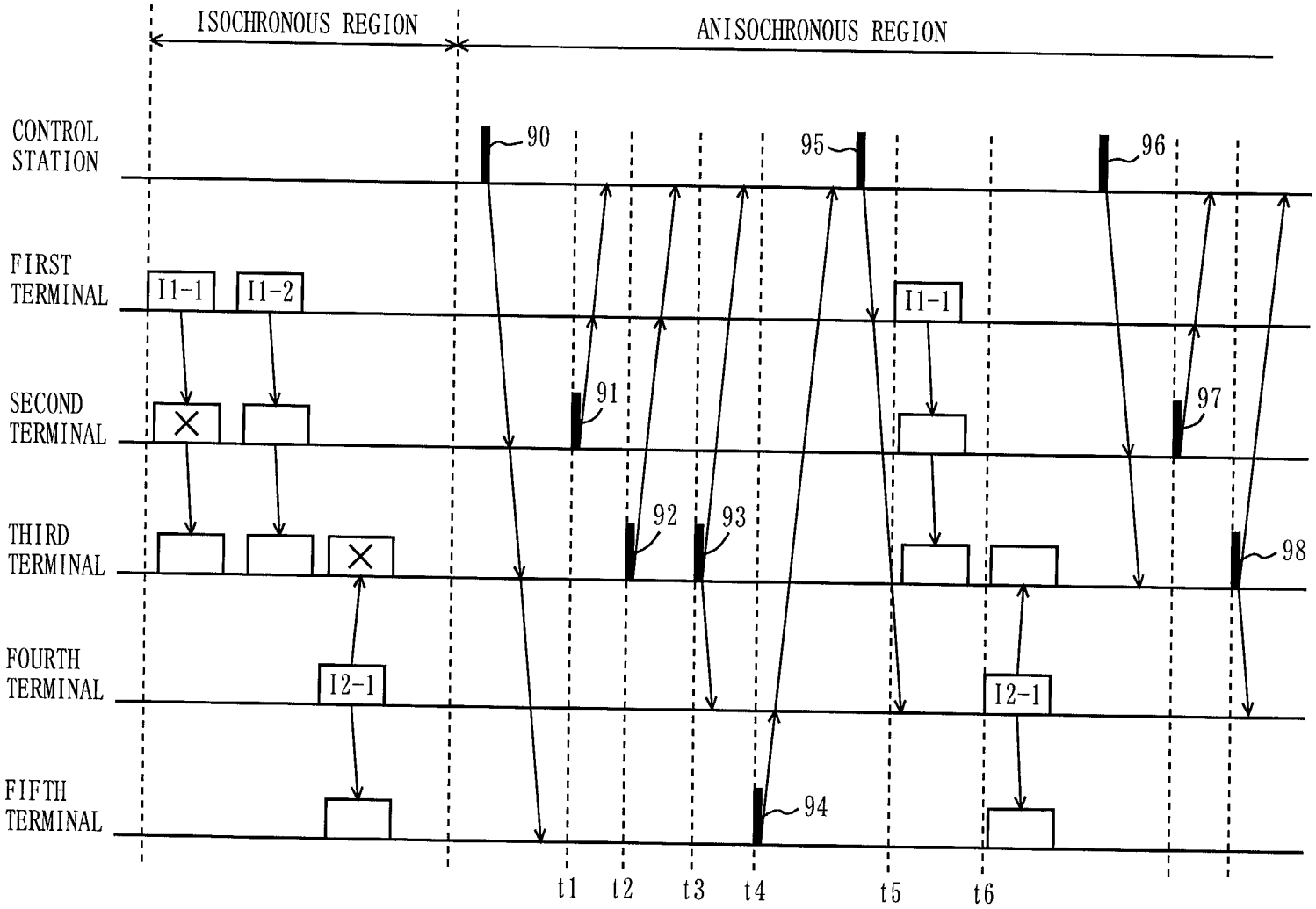
ISOCHRONOUS REGION
ANISOCHRONOUS REGION
CONTROL STATION
FIRST TERMINAL
SECOND TERMINAL
THIRD TERMINAL
FOURTH TERMINAL
FIFTH TERMINAL
I1-1
I1-2
I2-1
90
91
92
93
94
95
96
97
98
t1
t2
t3
t4
t5
t6

FIG. 16

GLOBAL INQUIRY PACKET HEADER	
TRANSMISSION TERMINAL ADDRESS 2	RECEPTION TERMINAL ADDRESS 1
TRANSMISSION TIME t1	
TRANSMISSION TERMINAL ADDRESS 3	RECEPTION TERMINAL ADDRESS 1
TRANSMISSION TIME t2	
TRANSMISSION TERMINAL ADDRESS 3	RECEPTION TERMINAL ADDRESS 4
TRANSMISSION TIME t3	
TRANSMISSION TERMINAL ADDRESS 5	RECEPTION TERMINAL ADDRESS 4
TRANSMISSION TIME t4	
CRC	

FIG. 17

GLOBAL RETRANSMISSION INSTRUCTION PACKET HEADER	
TRANSMISSION TERMINAL ADDRESS 1	RECEPTION GROUP 1
TRANSMISSION TIME t5	
TRANSMISSION TERMINAL ADDRESS 4	RECEPTION GROUP 2
TRANSMISSION TIME t6	
CRC	

FIG. 18

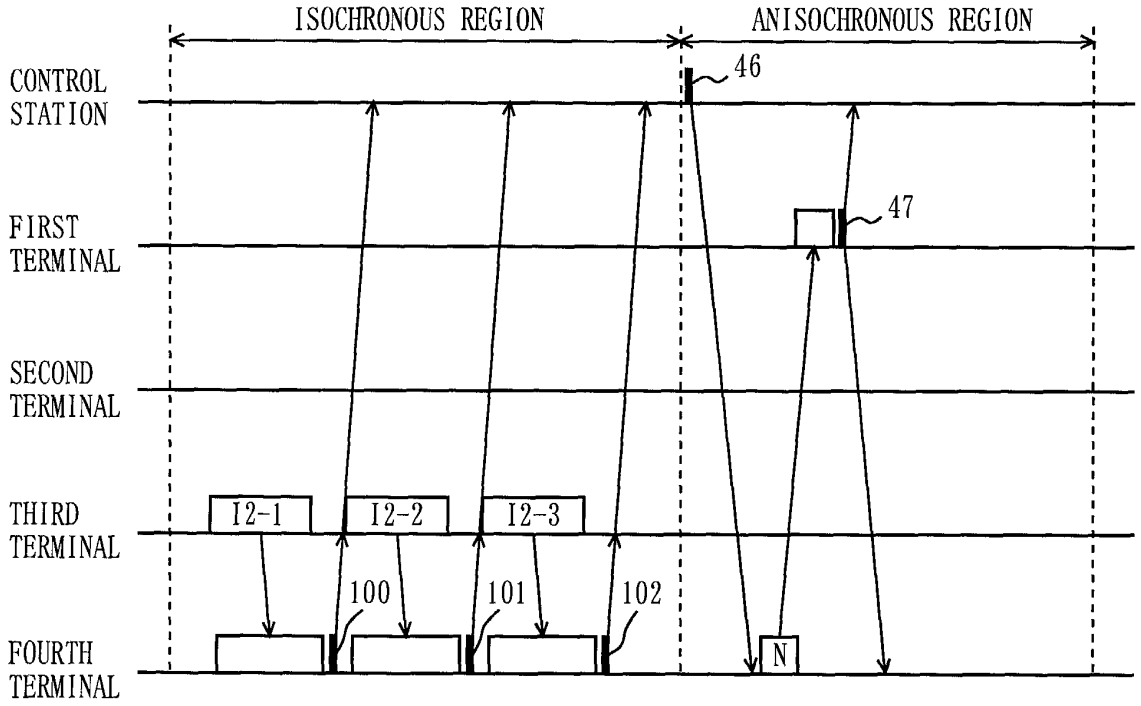
ISOCHRONOUS REGION
ANISOCHRONOUS REGION
CONTROL STATION
FIRST TERMINAL
SECOND TERMINAL
THIRD TERMINAL
FOURTH TERMINAL
46
47
I2-1
I2-2
I2-3
100
101
102
N

FIG. 19

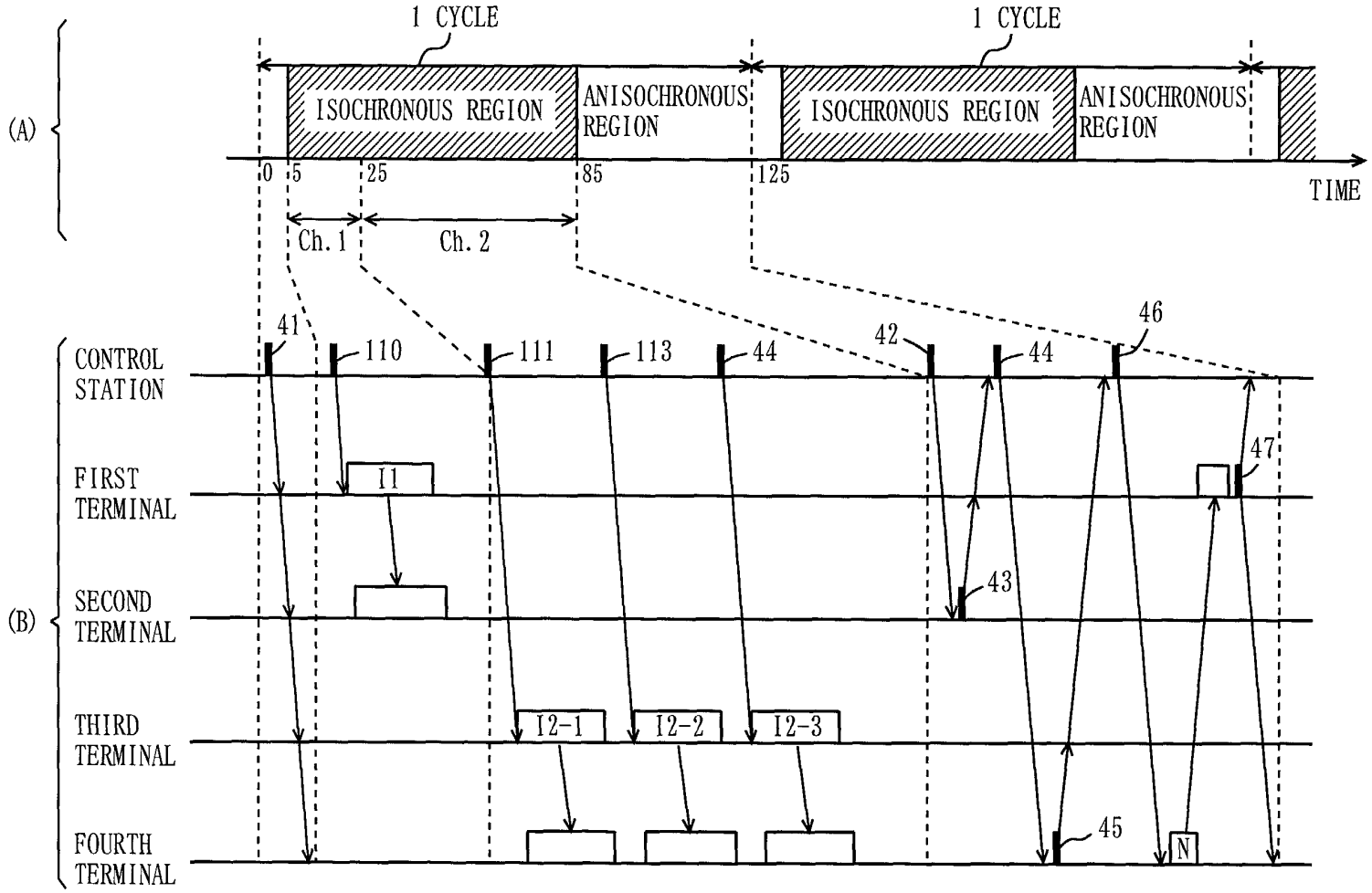
(A)
1 CYCLE
1 CYCLE
ISOCHRONOUS REGION
ANISOCHRONOUS REGION
ISOCHRONOUS REGION
ANISOCHRONOUS REGION
0
5
25
85
125
TIME
Ch. 1
Ch. 2
(B)
CONTROL STATION
FIRST TERMINAL
SECOND TERMINAL
THIRD TERMINAL
FOURTH TERMINAL
41
110
111
113
44
42
44
46
47
I1
43
I2-1
I2-2
I2-3
45
N

FIG. 20

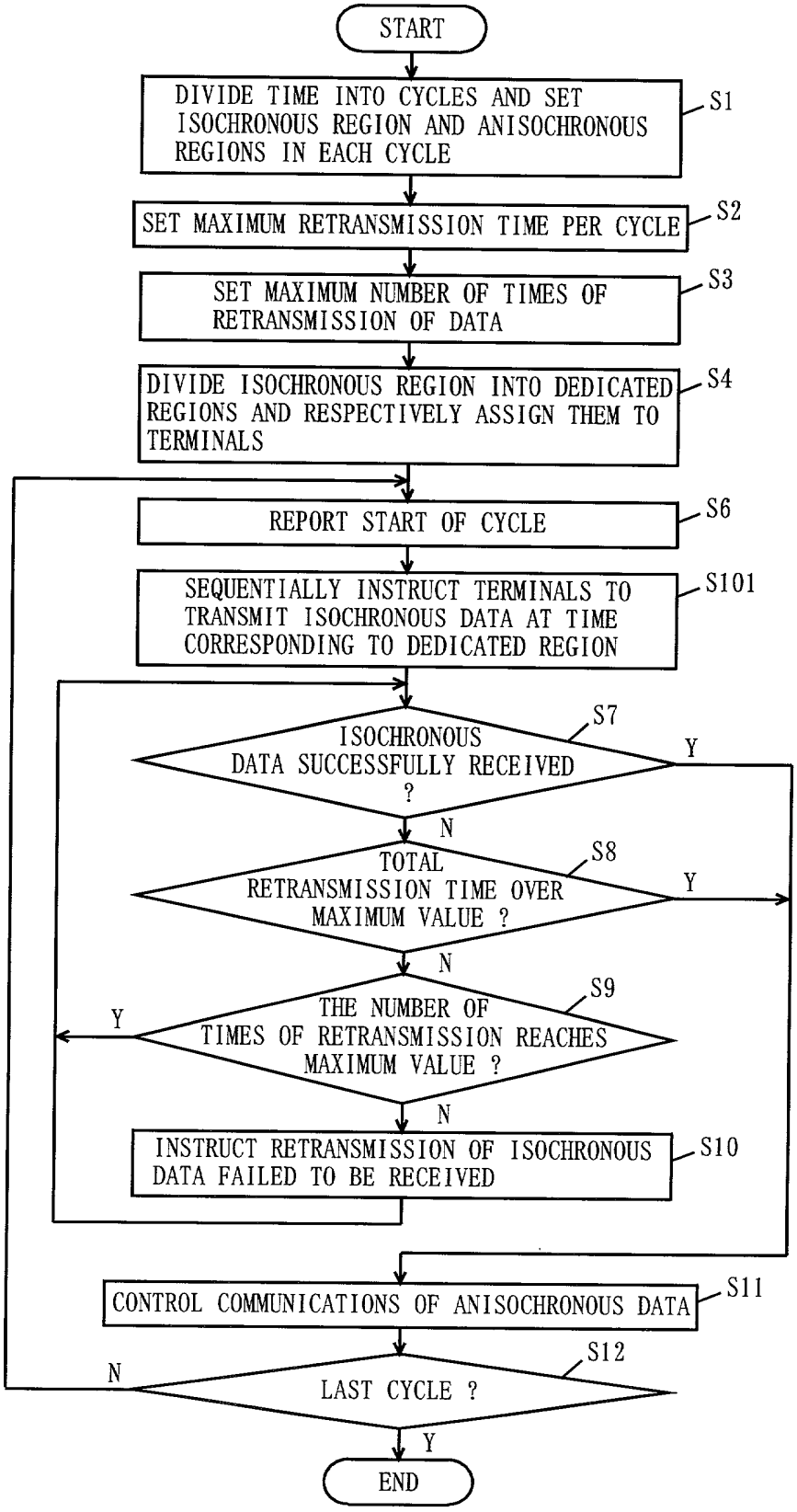
START
DIVIDE TIME INTO CYCLES AND SET ISOCHRONOUS REGION AND ANISOCHRONOUS REGIONS IN EACH CYCLE
S1
SET MAXIMUM RETRANSMISSION TIME PER CYCLE
S2
SET MAXIMUM NUMBER OF TIMES OF RETRANSMISSION OF DATA
S3
DIVIDE ISOCHRONOUS REGION INTO DEDICATED REGIONS AND RESPECTIVELY ASSIGN THEM TO TERMINALS
S4
REPORT START OF CYCLE
S6
SEQUENTIALLY INSTRUCT TERMINALS TO TRANSMIT ISOCHRONOUS DATA AT TIME CORRESPONDING TO DEDICATED REGION
S101
ISOCHRONOUS DATA SUCCESSFULLY RECEIVED ?
S7
Y
N
TOTAL RETRANSMISSION TIME OVER MAXIMUM VALUE ?
S8
Y
N
THE NUMBER OF TIMES OF RETRANSMISSION REACHES MAXIMUM VALUE ?
S9
Y
N
INSTRUCT RETRANSMISSION OF ISOCHRONOUS DATA FAILED TO BE RECEIVED
S10
CONTROL COMMUNICATIONS OF ANISOCHRONOUS DATA
S11
LAST CYCLE ?
S12
N
Y
END

FIG. 21

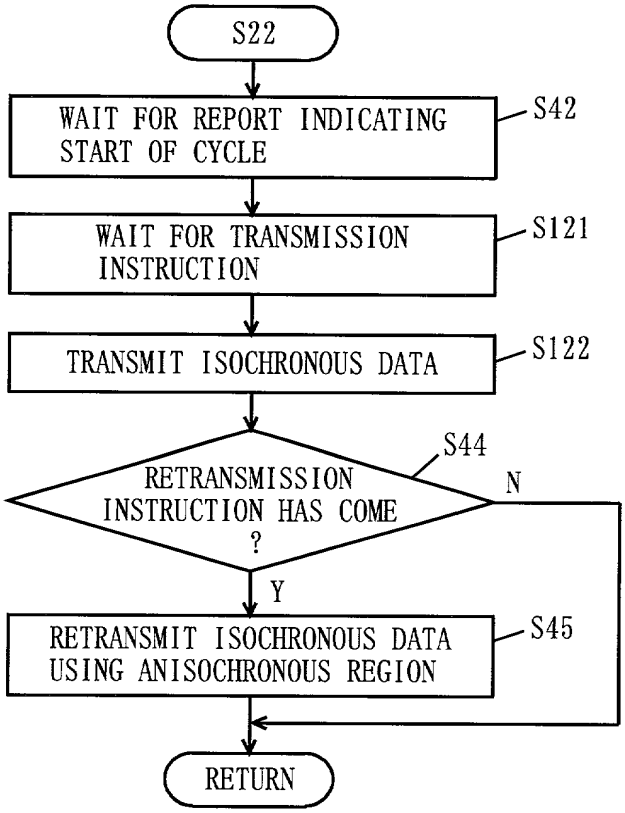
S22
WAIT FOR REPORT INDICATING START OF CYCLE
S42
WAIT FOR TRANSMISSION INSTRUCTION
S121
TRANSMIT ISOCHRONOUS DATA
S122
RETRANSMISSION INSTRUCTION HAS COME ?
S44
N
Y
RETRANSMIT ISOCHRONOUS DATA USING ANISOCHRONOUS REGION
S45
RETURN

FIG. 22

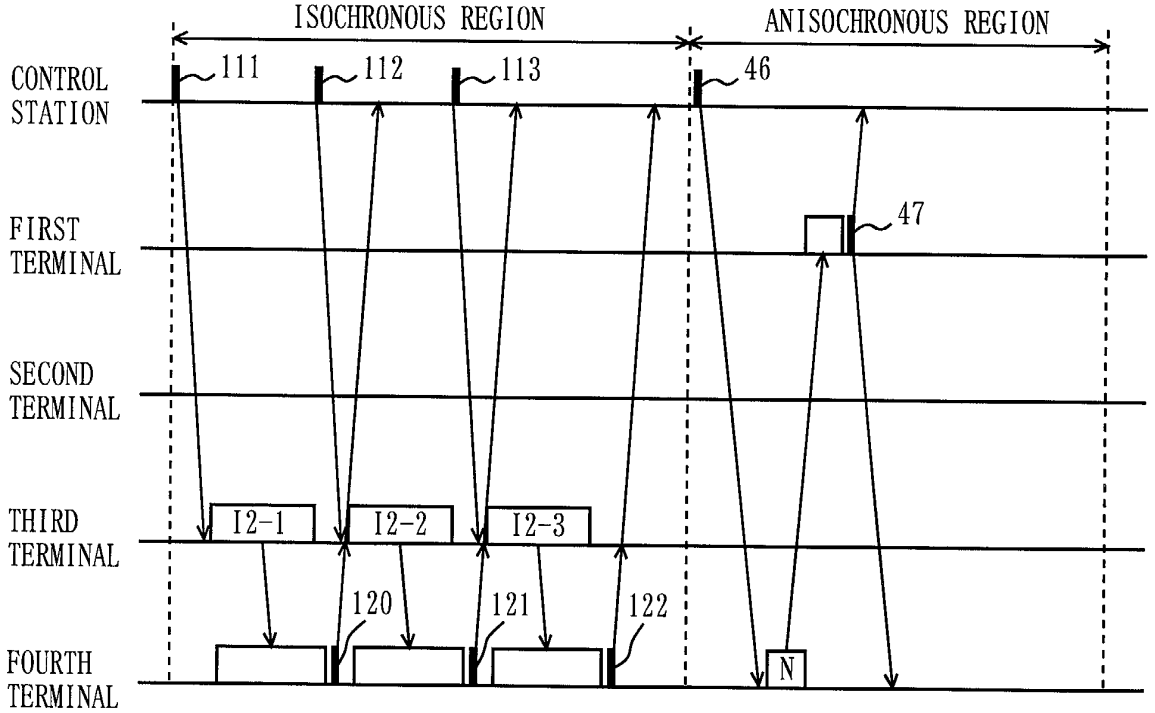
ISOCHRONOUS REGION
ANISOCHRONOUS REGION
CONTROL STATION
FIRST TERMINAL
SECOND TERMINAL
THIRD TERMINAL
FOURTH TERMINAL
111
112
113
46
47
I2-1
I2-2
I2-3
120
121
122
N

FIG. 23 PRIOR ART

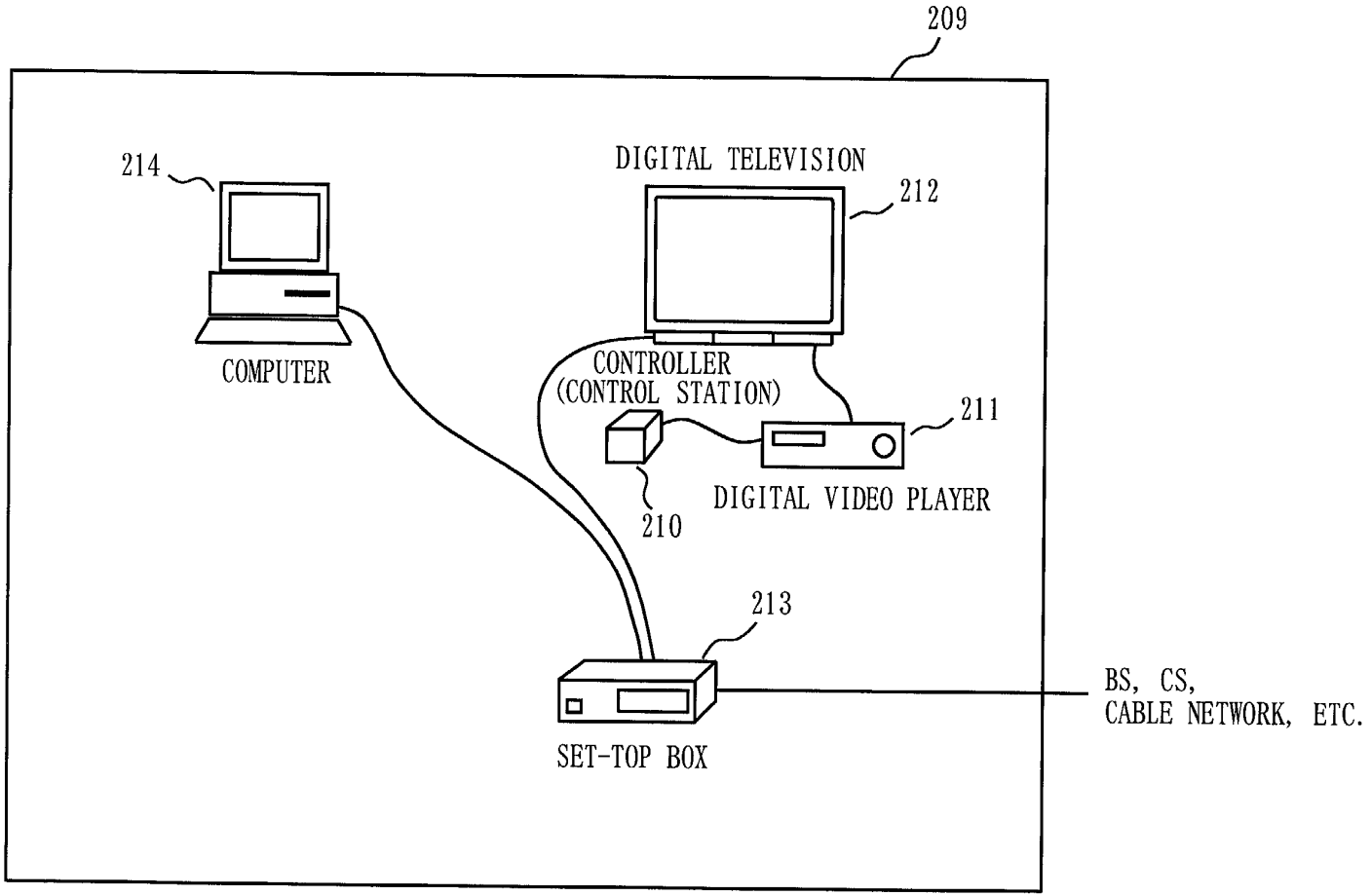
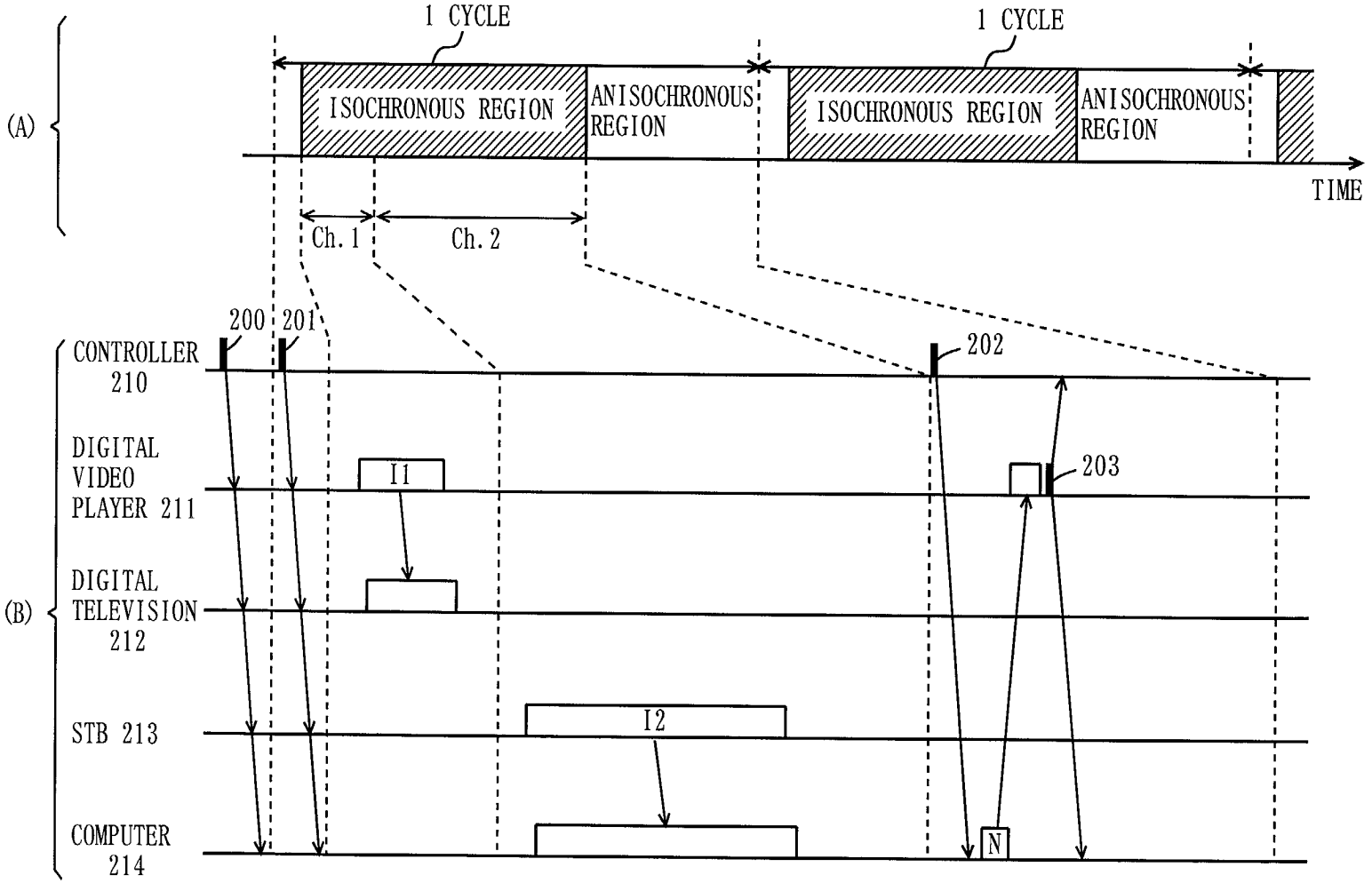
FIG. 24 PRIOR ART